EXHIBIT B
(PART 2)

Aug. 10, 1943. E. EICHENBERGER 2,326,343

PENCIL TYPE FLASHLIGHT

Filed March 21, 1941

FIG. 1.

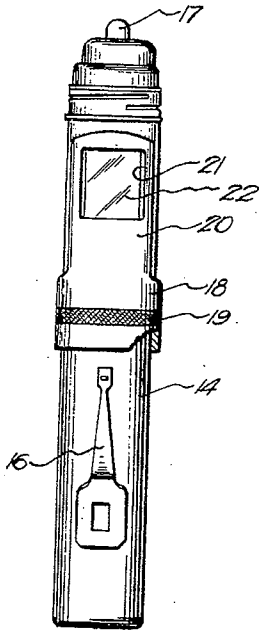


FIG. 2.

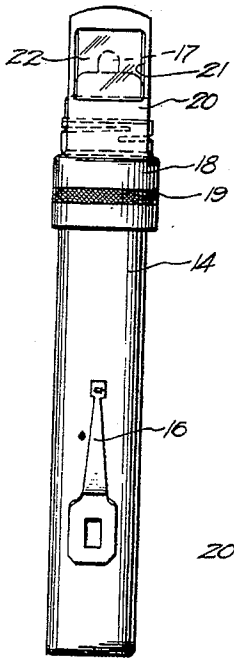


FIG. 3.

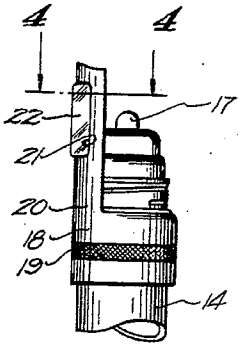
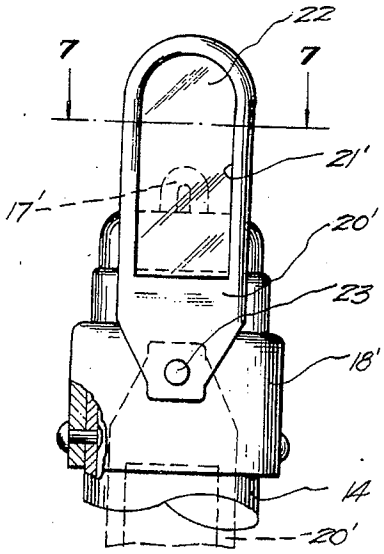


FIG. 4.

FIG. 5.

FIG. 6.



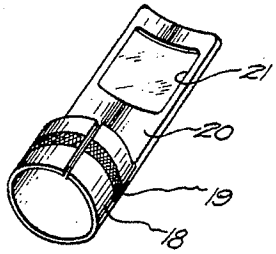


FIG. 7.

INVENTOR.
ERWIN EICHENBERGER.
BY

Patented Aug. 10, 1943 2,326,343

UNITED STATES PATENT OFFICE

2,326,343

PENCIL TYPE FLASHLIGHT

Erwin Eichenberger, Detroit, Mich.

Application March 21, 1941, Serial No. 384,438

2 Claims. (Cl. 88—39)

My invention relates to a new and useful improvement in a flash light attachment adapted particularly for use on the pencil type flash lights which are of very small diameter and may be carried in the pocket similar to a pencil.

In the use of a flash light it is frequently necessary to magnify the object on which the light is directed. Particularly is this so in reading small print and especially in reading gas meters and electric meters and the like located in dark places. The device is also adapted for use in reading matters in small print and particularly adapted for use by military officers in reading maps and the like. The invention has also proven itself quite efficient in food inspection operations, permitting the food to be illuminated and, at the same time, magnified while being examined.

It is an object of the present invention to provide a flash light equipped with magnifying means so constructed and arranged and mounted on the flash light that it may be easily and quickly moved to position for use and moved to non-usable position, while, at the same time, the size of the flash light itself is substantially unaffected.

It is another object of the present invention to provide a device of this type, which will be simple in structure, economical of manufacture, durable, compact, easily and quickly mountable in position and removed therefrom and one which will be highly efficient in use. Other objects will appear hereinafter. It is recognized that various departures from the detail of structure illustrated may be made without departing from the invention, and it is intended that such modifications and variations may be embraced within the scope hereof.

Forming a part of this specification is a drawing in which:

Fig. 1 is a side elevational view showing a magnifying lens in an inoperative position.

Fig. 2 is a view similar to Fig. 1 showing the magnifying lens in operative position.

Fig. 3 is a fragmentary side elevational view of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the slidable attachment.

Fig. 6 is a fragmentary side elevational view of a slightly modified form of the invention with parts broken away and parts shown in section.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6.

In the drawing I have illustrated the flash light 14 provided with a spring clip 16 which may be used for securing the device in the pocket. The flash light is provided with the necessary means for turning the same on and off, and projecting outwardly from the forward end thereof is the light bulb 17. Embracing the body of the flash light 14 is a collar or sleeve 18 provided with knurling 19 for facilitating the slidable movement of the collar on the body of the flash light. As shown in Fig. 5 this collar 18 is split and preferably formed of resilient material so that it will securely grip the body of the flash light and be retained at the positions in which it is moved. It is believed obvious that if desired, a freely slidable sleeve may be moved with a rocking mechanism such as a boss and recess associated with the body and sleeve or collar for securing the structure in various positions of movement. Extending outwardly from the sleeve or collar 19 is an arcuate plate 20 which in reality forms a continuation of the sleeve or collar. An opening 21 formed in this plate 20, and mounted in this opening is a magnifying lens 22.

The construction is such that when the flash light is carried in the pocket the sleeve 18 is slid into the position in Fig. 1, so that the plate 20 lies within the end limits of the flash light body. This structure is preferably made from very thin metal or plastic material so that the size of the body of the flash light is substantially unaltered so that no bulky structure is built up to prevent the easy carrying of the flash light in the pocket. When desired to use the magnifying feature of the invention, the sleeve or collar 18 is slid toward the forward end of the body as shown in Fig. 2, therewith the magnifying lens 22 overlies the area directly in front of the bulb 17; thus it becomes possible to illuminate the material which is visible through the magnifying lens 22 and the advantages sought are thus obtained.

In Fig. 6 I have shown a slightly modified form of construction in which the collar or sleeve 18' is fixedly mounted on the body of the flash light 14' and the plate 20 is dispensed with. Pivotally mounted by means of the pivot pin 23 on the collar 18' is a swingable plate 20' having an opening 21' formed therein in which is mounted the magnifying lens 22'. When it is desired to use the invention the plate 20' is swung into full line position shown in Fig. 6 so that this plate extends beyond the forward end of the flash light retaining the magnifying lens 22' over the area which may be illuminated by the light bulb 17'. When the flash light is not in use the plate 20' may be swung around into the dotted line position shown in Fig. 6 so as to lie within the mar-

ginal limits of the body of the flash light 14. In both types of structures it will be noted that the magnifying lens, when in inoperative position, lies within the marginal limits of the flash light 14. The use and operation of the modified form is similar to the form shown in Fig. 1, the method of mounting being slightly altered.

What I claim as new is:

1. In combination with a flash light having a body and a light bulb in one end thereof, a split resilient sleeve embracing and slidably mounted on said body; a curved extension plate projecting forwardly from said sleeve and movable in unison therewith and having an opening formed therein and adapted for lying between the ends of said body and for being projected beyond the light bulb bearing end of said body; and a magnifying lens mounted in said opening and overlying the area in front of said light bulb upon the projection of said plate beyond the end of said body.

2. An attachment for a flash light consisting of a split sleeve adapted to resiliently and slidably embrace the barrel of the flash light, said sleeve having a knurled portion adapted to serve as a finger grip, and a member extending beyond said knurled portion, said extension member having a window therein in which is secured a magnifying lens, said extension member and said lens being curved to closely conform to the contour of the flash light barrel.

ERWIN EICHENBERGER.

Sept. 11, 1945. J. F. BRANDT ET AL 2,384,528

OPTICAL INSTRUMENT

Filed April 7, 1943

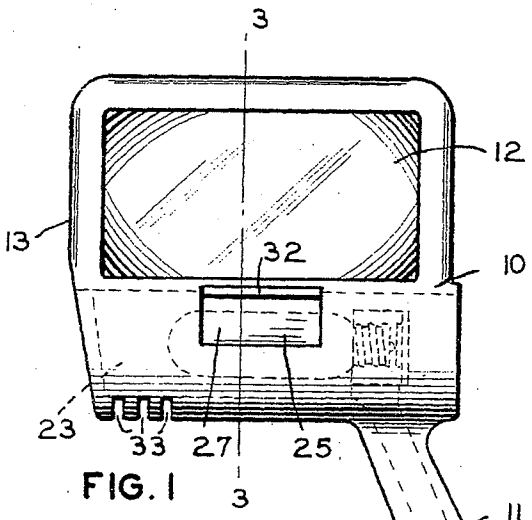


FIG. 1

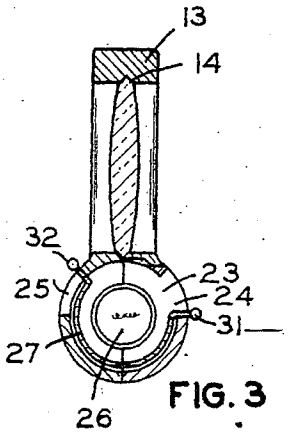


FIG. 3

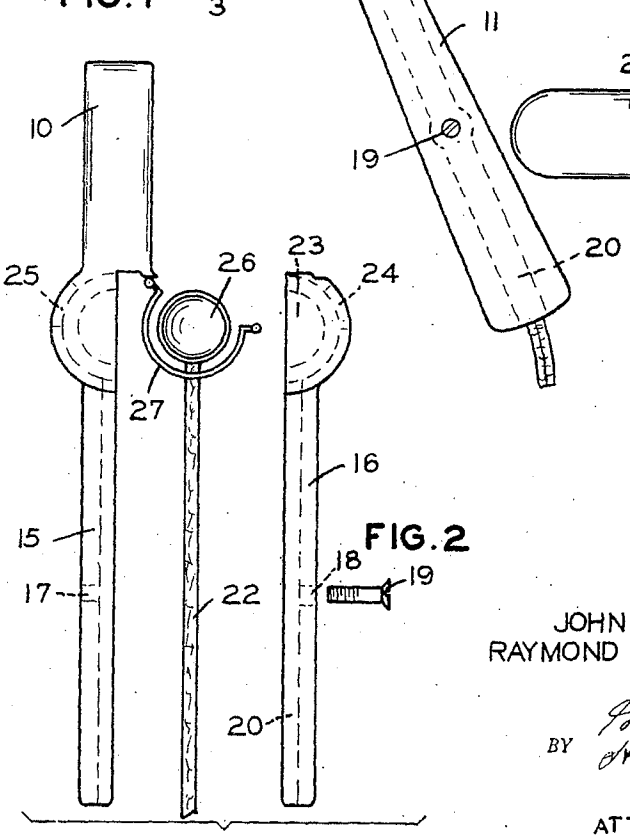


FIG. 2

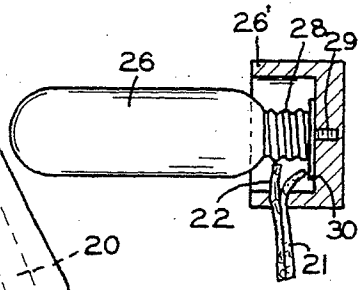


FIG. 4

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BY G. A. Ellestad
H. J. Schmid

ATTORNEYS

Patented Sept. 11, 1945

2,384,528

UNITED STATES PATENT OFFICE

2,384,528

OPTICAL INSTRUMENT

John F. Brandt, Irondequoit, and Raymond F. E. Stegeman, Rochester, N. Y., assignors to Bausch & Lomb Optical Company, Rochester, N. Y., a corporation of New York

Application April 7, 1943, Serial No. 482,106

6 Claims. (Cl. 88—39)

The present invention relates to optical instruments and more particularly to hand magnifiers or reading glasses provided with a source of illumination to facilitate their use under adverse light conditions, and having means for permitting illumination on either side of a magnifying lens.

In illuminated magnifiers heretofore proposed, the light source has been so mounted relative to the lens that the magnifier could not be used except in the one position in which the light rays were directed outwardly of one side of the lens and onto the field to be examined. These prior devices, although they would illuminate an object being examined, were objectionable in that care had to be taken in the use thereof to insure that the magnifier was held in the correct relationship to the object for, if the magnifier was not properly held, the light rays would strike the eyes of the user.

In the magnifier of the present invention, this objection has been obviated for no care need be taken to insure that the same is properly disposed in relation to the object undergoing examination, in that, the present invention provides means for selectively illuminating an object placed on either side of the lens of the magnifier. In the embodiment of the invention now preferred, the light source is carried within a chamber formed internally of the lens holder, the latter being provided with light passages leading from the chamber to opposite surfaces thereof so that light may be directed to illuminate objects placed on opposite sides of the lens of the magnifier. To prevent light from being directed outwardly of the magnifier on opposite sides thereof at the same time, the lens holder carries a reflector shield which is selectively movable between alternate positions in which the same selectively closes one passage and prevents light from passing therethrough, thereby insuring illumination of the object on one side and shielding the eyes of the user on the other side.

While the above illuminated magnifier is to be taken as the embodiment of our invention, it is also to be noted that the structure of the magnifier has certain features worthy of being given consideration as lending to the efficiency and utility of the magnifier in use. As can be seen from the drawing, the magnifier has a handle angularly projecting from an edge of the lens holder and extending obliquely in relation to the axis of the lens. This feature is important in the use of the magnifier for reading purposes, as the magnifier may be grasped in one hand and, when it is desired to use the other hand for holding the magnifier, the magnifier is turned over in a reversed position and grasped by the other hand. In both cases the handle will be extending outwardly so that it may be held in natural positions of the hand and arm.

Hence, my invention holds for its primary object, the provision of a hand magnifier having means for permitting selective illumination of a field on either side of a magnifying lens.

Another object of the invention is to provide a hand magnifier having means for selectively illuminating either side of a magnifying lens by directing light from a single light source located in the magnifier handle.

These and other objects and advantages reside in certain novel features of the construction, arrangement, and combination of parts as will hereinafter be more fully set forth and pointed out in the appended claims.

In the drawing:

Fig. 1 is a plan view of the device.

Fig. 2 is an exploded view of the device.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view showing the manner of mounting the light source and the connecting electric conductors.

In the embodiment of the invention illustrated in the drawing, the magnifier comprises a rectangular body 10 having an offset tubular handle 11. The tubular handle 11 angularly projects from an edge of the body 10 and obliquely in relation to the axis of a magnifying lens 12. The rectangular magnifying lens 12 is securely held in place by a rim 13 of the body 10. A groove 14 of the rim 13 is adapted to receive the periphery of the lens 12.

The tubular handle 11 comprises two members 15 and 16, the member 15 being an integral part of the body 10 and the member 16 being separated from the body 10. The members 15 and 16 are secured together to form the handle by means of openings 17 and 18 in their central portions receiving a screw 19. The screw is passed through the opening 18 of the member 16 and engages the threaded opening 17 of the member 15 to secure the members 15 and 16 together to form the handle. The handle 11 is provided with a suitable bore 20 for receiving electric conductors 21 and 22. If desired, the bore 20 in the handle 11 may be so fashioned as to receive an electric battery in place of the electric cords 21 and 22.

A cylindrical chamber 23, having rectangular openings 24 and 25 in its side walls, is formed

in the upper portion of the handle 11 by the joinder of the handle members 15 and 16 for housing a lamp 26, and a unitary semi-cylindrical reflector shield 27. The lens 12 lies directly above and extends longitudinally of the chamber 23, being separated therefrom by a portion of the rim 13. The lamp 26 is mounted in a separate unit 26' inserted in one side of the chamber 23. The lamp 26 has its base secured into a threaded opening in the lamp socket 28. The bottom portion of the socket has an opening therein to receive a screw 29 and is fastened in the unit 26' in the chamber 23 by the screw passing through an opening in a metallic plate 30 and a threaded opening in the side of the unit 26', as shown in Fig. 4. One of the electric conductors 21 is fastened to the metallic plate 30 and the other electric conductor 22 is secured to the lamp socket 28, thus completing an electric circuit for illumination of the lamp 26.

The unitary semi-cylindrical reflector shield 27 is enclosed within the cylindrical chamber 23 and is adapted to contact the walls of said chamber for guiding and sliding movement circumferentially therealong. The member 27 has an inner light reflecting surface surrounding the lamp 26 so that the light emitted from the lamp 26 is concentrated onto the field through either of two rectangular openings 24 and 25 in the walls of the chamber 23, and an outer surface adapted to be engaged by the walls of the cylindrical chamber 23 and to be moved therein by means of stop members 31 and 32. These stop members 31 and 32 are formed from the transversely bent end portions of the member 27 and act to prevent lateral movement and to limit radial movement of the member 27 in the rectangular openings 24 and 25. The position of the member 27, in each of its two positions, is such as to cover one of the rectangular openings to prevent the emission of light and to open the other rectangular opening to allow the light rays from the lamp 26 to illuminate the field. By shifting the member 27 by either of the stop members 31 and 32, the rays of light of the lamp 26 are shielded from the eyes of the user by closing one of the rectangular openings on one side of the magnifier while they are emitted through the other opening on the other side of the magnifier onto the field. In this manner, either side of the magnifier may be used for observation, with the magnified field illuminated and the eyes protected from the light rays. Due to the concentrated illumination produced by the elongated lamp 26 and the reflecting member 27 through either of the rectangular openings 24 and 25 in the cylindrical chamber 23, the entire magnified field of the rectangular lens 12 is adequately illuminated when the lens is held at reading focus above printed matter or other material. Also, due to the offset handle portion, the user may shift the magnifier conveniently from one hand to the other, thus reversing the lens and by manipulating one of the stop members 31 and 32 illuminate the magnified area while shielding the eyes from the light rays. The heat generated by the lamp 26 is dissipated through the openings 33 and either of the openings 24 or 25 in the chamber 23, depending on which side of the magnifier is being used.

From the foregoing, it will be apparent that we are able to attain the objects of our invention, in that, we have provided a novel magnifier for selectively illuminating the field on either side of a magnifying lens from a single light source located in the magnifier. Various modifications can, of course, be made without departing from the spirit of our invention or the scope of the appended claims.

We claim:

1. An illuminated hand held magnifier comprising a magnifying lens of oblong shape; a holder for said lens; a handle extending obliquely from the holder; a light source carried by said holder and extending along one of the longer edges of the lens; and means for selectively illuminating an object placed on one side or the other of said lens, said means comprising a movable reflector formed with an inner reflecting surface for selectively directing light to said object and preventing light from passing in the opposite direction to shield the eyes of the user from light when looking through said lens at the object.

2. An illuminated hand held magnifier comprising an elongated magnifying lens; a holder for said lens; a handle projecting obliquely from the holder, said holder being formed with a chamber extending longitudinally therethrough along one of the longer edges of the lens and having light passages leading from the exterior of said holder to opposite sides of said chamber; a light source disposed within said chamber and adapted to emit light rays through said passages for illuminating fields as viewed from either side of said magnifier; and a reflector movably mounted in said chamber for directing light through a selected passage, said reflector being so constructed and arranged relative to said chamber and the passages leading thereto that the reflector, when moved to direct light through the selected passage, closes the other of said passages.

3. An illuminated hand held magnifier comprising an elongated magnifying lens; a holder for said lens; a handle extending obliquely from the holder; an elongated light source; a cylindrical chamber formed within said holder and extending along one of the longer sides of the lens; means for mounting said light source within said chamber, said holder being formed with a pair of light passages leading from opposite surfaces of said lens to opposite sides of said chamber; and means for selectively illuminating an object placed on one side or the other of said lens by directing light from said source to a selected passage leading to the side of said lens adjacent said object, said means comprising a hollow cylindrical member rotatably mounted within said chamber and having a reflecting inner surface and an outer surface adapted to be guidingly engaged by the cylinder wall of said chamber, said member being so constructed and arranged relative to said chamber and passages that the same when rotatably moved to direct light through the selected passage closes the other of said passages.

4. An illuminated hand held magnifier comprising an elongated magnifying lens; a holder for said lens; a handle extending obliquely from the holder; an elongated light source; a cylindrical chamber formed within said holder and extending along one of the longer sides of the lens; means for mounting said light source within said chamber, said holder having a pair of passages formed in opposite walls thereof and leading from said chamber to opposite sides of said lens; and means for selectively directing light from said source to a selected passage for illuminating an object placed on one side or the other of said lens, said means comprising a hollow semi-cylinder member rotatably mounted in said chamber and having a reflecting inner surface disposed about said

source and an outer surface adapted to be guidingly engaged by the inner cylinder wall of said chamber, said member being so constructed and arranged relative to said chamber and the passages of said holder that the member when moved to direct light through a selective passage prevents light from passing through the other of said passages whereby the eyes of the user are shielded against light from said source.

5. An illuminated hand held magnifier comprising a rectangular magnifying lens; a rectangular body member for holding said lens and having a chamber formed therein adjacent the one edge of said lens, said body member formed with a pair of passages leading from opposite sides of said member adjacent the said edge of said lens to opposite sides of said chamber; a handle carried by said body member and obliquely extending outwardly relative to said lens in the normal use of the magnifier; a light source disposed in said chamber; and means for selectively illuminating an object placed on one side or the other of said lens by directing light from said source to a selective passage, said means comprising a reflector shield surrounding said light source and being so constructed and arranged relative to said chamber and the passages of said body member that said reflector when moved to direct light through a selected passage closes the other of said passages and shields the eyes of the user from the light rays from said source whereby said magnifier can be held by either hand of the user with the handle thereof extending outwardly relative to said lens.

6. An illuminated magnifier comprising a holder, a magnifying lens of oblong shape carried by the holder, a handle projecting obliquely from the holder and lying substantially in the plane of the lens, an elongated light source carried by the holder and extending along one of the longer edges of the lens, and means for selectively directing light rays from said source to one face or the other of the lens.

JOHN F. BRANDT.
RAYMOND F. E. STEGEMAN.

April 29,1952 R. S. FILSINGER Des. 166,597

ILLUMINATING MAGNIFIER

Filed May 31, 1951

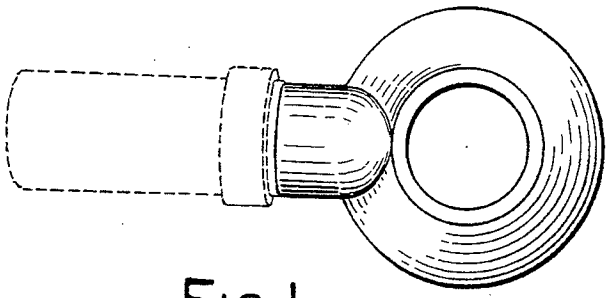

FIG. 1

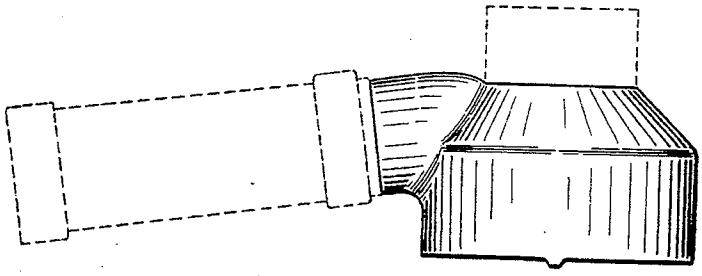

FIG. 2

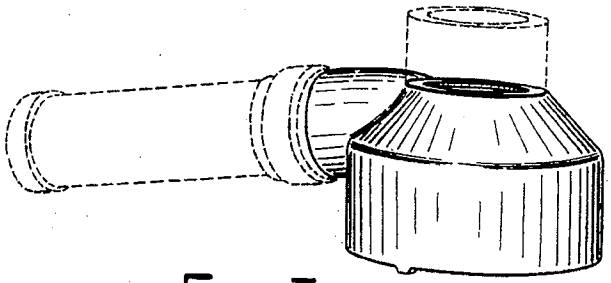

FIG. 3

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BY
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Patented Apr. 29, 1952

Des. 166,597

UNITED STATES PATENT OFFICE

166,597

ILLUMINATING MAGNIFIER

Robert S. Filsinger, Rochester, N. Y., assignor to Bausch & Lomb Optical Company, Rochester, N. Y., a corporation of New York

Application May 31, 1951, Serial No. 15,357

Term of patent 14 years

(Cl. D57—1)

To all whom it may concern:

Be it known that I, Robert S. Filsinger, a citizen of the United States and a resident of Rochester, county of Monroe, and State of New York, have invented a new, original, and ornamental Design for an Illuminating Magnifier, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

Fig. 1 is a top plan view of an illuminating magnifier, showing my new design.

Fig. 2 is a side view thereof.

Fig. 3 is a front perspective view thereof.

The characteristic features of my design are shown in full lines on the drawing.

I claim:

The ornamental design for an illuminating magnifier, substantially as shown and described.

ROBERT S. FILSINGER.

REFERENCES CITED

The following references are of record in the file of this patent:

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Feb. 19, 1952 S. SAKOLS 2,586,723

ILLUMINATED MAGNIFYING LENS

Filed Sept. 25, 1948

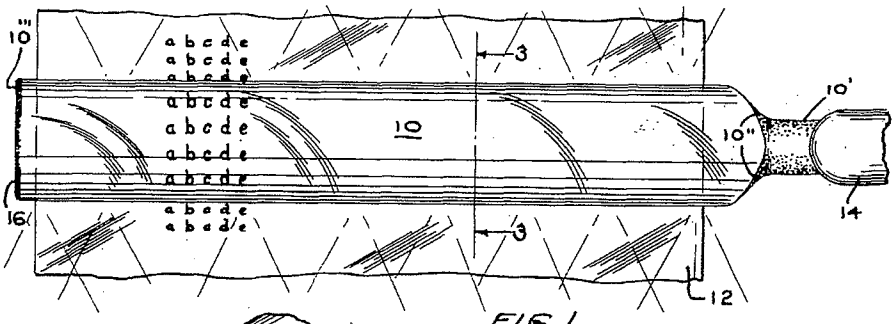

FIG. 1.

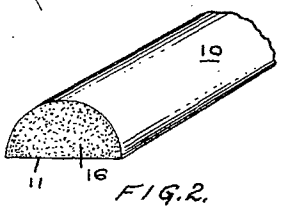

FIG. 2.

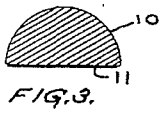

FIG. 3.

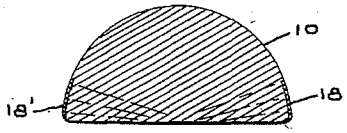

FIG. 6.

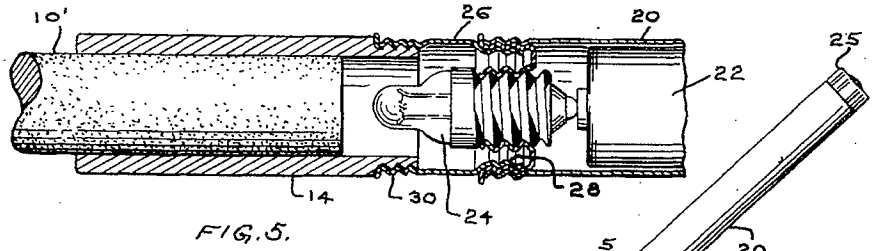

FIG. 5.

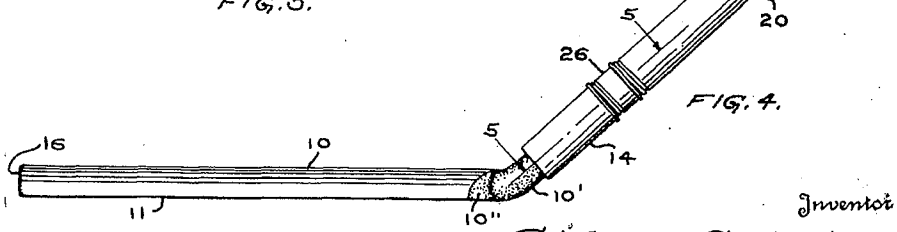

FIG. 4.

Inventor

Sidney Sakols

By J. Wesley Everett

Attorney

Patented Feb. 19, 1952 2,586,723

UNITED STATES PATENT OFFICE

2,586,723

ILLUMINATED MAGNIFYING LENS

Sidney Sakols, Baltimore, Md.

Application September 25, 1948, Serial No. 51,231

1 Claim. (Cl. 88—39)

1

The present invention relates in general to reading lenses and in particular to a lens constructed of a plastic material such as cellulose acetate or preferably of a polymerized derivative of methacrylic acid commercially known as "Lucite" which has the properties to direct a concentrated beam of light longitudinally therethrough. It is, therefore, contemplated to utilize these properties in the construction of an improved reading lens.

There are, at the present time, many types of reading, or magnifying, lenses in use including various types of supports and means for lighting the material to be observed; however, the present device is believed to be a substantial improvement over these present forms for certain specific uses.

The primary object of the invention is to provide a reading lens in which a plastic material is used having the properties of directing light longitudinally therethrough in combination with a light source and means for concentrating the light within the main magnifying area of the lens.

Another object is to provide such a lens which may be easily and readily attached to an ordinary flashlight.

Still another object is to provide a reading lens that may be readily carried in a hand bag, or pocket, which will not be too heavy or burdensome and which would be free from mechanical defects.

Such a reading lens would have numerous uses and advantages over the present type, such as, reading programs in theaters when the lights are off, reading thermometers, charts and the like in hospitals where the light is usually very dim. It would be especially useful in reading maps at night, particularly for the military when the use of lights is prohibited.

While several objects, uses, and advantages of the device have been pointed out, others may become apparent as the nature of the device is described more in detail, which consists in the novel construction, combination and arrangement of parts shown in the accompanying drawings and described in the following detailed description showing the device in its preferred form embodying the invention and in which:

Figure 1 is a fragmentary plan view of the device.

Figure 2 is a fragmentary perspective view of the outer end of the lens.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

2

Figure 4 is a side elevation of the device.

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 4.

Figure 6 is a sectional view similar to Figure 3 of an enlarged modified form of the invention.

Referring now to the drawings, the numeral 10 identifies generally an elongated reading lens which is made from a cellulose acetate plastic having the properties of directing a concentrated beam of light longitudinally thereof. The shape of the lens in cross-section is substantially semi-circular being flat on its bottom side and in the form of a semi-circle on its upper surface, the flat side being adapted to rest upon the paper, or material, 12 as shown in Figure 1. The length of the lens is not fixed and may be of the length best suited for the particular case for which it is intended to be used. The lens has formed preferably at one end a neck-like piece 10' which is bent in an upward and outward direction of approximately 45 degrees as shown in Figure 4. This portion 10' is adapted to receive a coupling 14. The opposite end 10'' of the lens is provided with a reflector 16 for reflecting the light which reaches the opposite end of the lens back toward the main body, or magnifying portion, 10. Also a similar reflecting covering is placed about the neck portion 10' and the portion 10'' of the lens to reflect any light rays reaching these surfaces to the magnifying area 10 of the lens.

A cross-section of a modified form of lens is shown with thin mirrors 18 and 18', or a reflector coating along the longitudinal edges of the lens. These reflectors are for the same purpose as the end reflectors, that is, to reflect the light that may reach the surfaces in these areas and reflect it back toward the center of the lens.

In order to light the lens, one or both ends of the lens is subjected to a light which is usually furnished from an electric bulb. For this purpose a hollow handle is provided capable of carrying a battery 22 and a small bulb 24 adjacent one end of the handle which may be turned off and on by any convenient switch mechanism, such as illustrated at 25.

Surrounding the bulb is a collar 26 having a thread 28 at one end for attaching it to the handle and a thread 30 for connecting it to the coupling 14. This collar 26 is not really necessary for the operation of the device as the member 14 may be secured directly to the handle. However, by using a collar such as 26 it affords protection for the bulb when the lens is detached. The collar also may be utilized to support the bulb. The lens may be provided with an adapter

for connecting the lens with a standard flashlight holder.

In operation the light may or may not be used, it depends upon how much available light is already present. The lens is placed with its flat side adjacent the paper, or object to be read, as shown in Figure 1, and moved along the paper as desired by the handle 20. When not in use the handle may be disconnected by unscrewing the member 14 from the collar 24, or the handle 20 if the collar is not used.

While the lighting of the lens is shown by use of a battery, it may also be accomplished by supplying current to the bulb by means of a light electric cord (not shown).

It is apparent that this device may have many and sundry uses in places where printing is small and lighting is poor.

The form of the invention is not to be limited to the exact arrangement of parts shown in the foregoing drawing and specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention and only in so far as the invention has been particularly pointed out in the accompanying claim is the same to be limited.

I claim:

A reading lens composed of a light transferring plastic material and comprising a portion having a relatively narrow elongated magnifying element, said magnifying element having a flat bottom surface adapted to overlie the reading matter and a semi-circular upper surface, a light

reflector extending throughout the length of the magnifying portion adjacent each side of the flat bottom surface, an integral neck portion extending outwards from one end of the magnifying portion and bent upwardly at an angle of approximately 45 degrees, a covering placed over the outer end of the magnifying portion and the neck portion for concentrating the light in the magnifying element, a coupling adapted to snugly fit over the upper end of the neck, the outer end of the coupling extending outwardly from the outer end of the neck, to provide a recess to receive the outer end of a lighting element, a collar threadably receivable on the outer end of the coupling, the opposite end of the collar having an inner and outer thread, the inner thread adapted to receive a light bulb and the outer thread adapted to receive a handle member.

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Dec. 6, 1955 K. W. PFLEGER 2,725,788

COMBINED READING GLASS AND LIGHT

Filed Dec. 11, 1952

Fig. 3.

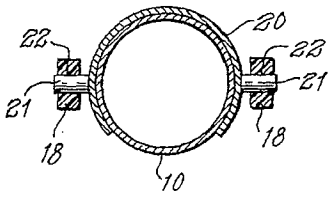


Fig. 1.

Fig. 2.

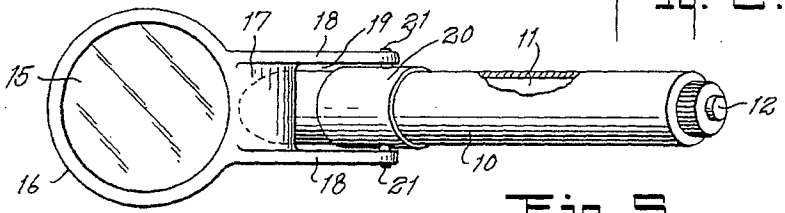
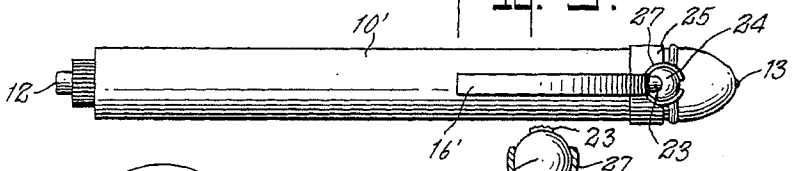


Fig. 5.



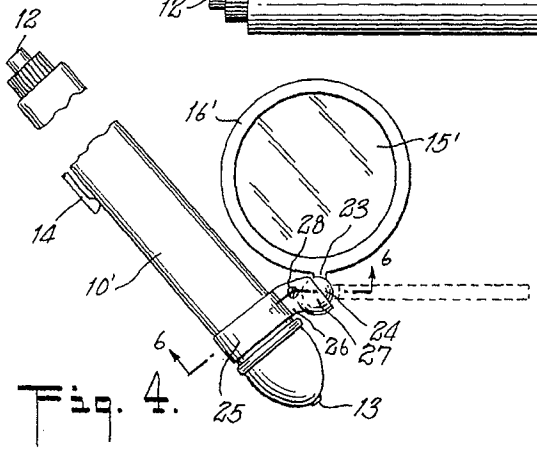


Fig. 4.

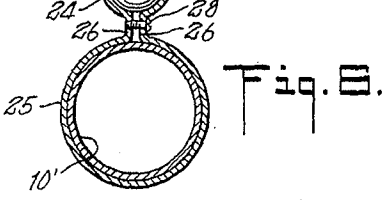


Fig. 8.

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United States Patent Office 2,725,788 Patented Dec. 6, 1955

2,725,788

COMBINED READING GLASS AND LIGHT

Kenneth W. Pfleger, Kearny, N. J.

Application December 11, 1952, Serial No. 325,387

1 Claim. (Cl. 88—39)

This invention relates generally to magnifying and illuminating devices and more particularly to a combined magnifying glass and flashlight.

A principal object of the present invention is to combine in one handy portable structure a magnifying lens and a source of illumination in such form and manner that the light rays will be substantially concentrated beneath the lens and not be broadly dissipated outside the area being examined.

Another object of the invention is to provide a combined battery-operated flashlight and lens in which the lens is hingedly and/or pivotally mounted on the flashlight so that it can be folded against the flashlight and so that the device can be readily inserted into and removed from a pocket in the clothing of the user, and may be supported in said pocket without showing any unsightly bulge, and so that the device may be placed in a purse or the like and take up a minimum of space.

Still another object of the invention is to provide a device of this kind with a shield in order to minimize any glare back at the user.

Yet another object of the invention is to provide a lens unit which may be readily mounted on any standard type of pocket flashlight.

A further object is to so construct the device that it is symmetrical with no sharp edges thereby preventing damage to clothing and the like.

A still further object is to provide a device of this kind in which the lens is slidably mounted along the flashlight in order to give a range of adjustment for the optical system.

It is further proposed to provide a clamp on the device whereby it may be clamped on any suitable support.

It is also proposed to provide a combined flashlight and lens in which the device assumes the optimum locations for light and lens, and which only requires one hand to manipulate.

Other objects of the invention are to provide a combined pocket flashlight and magnifying lens which is simple in construction, compact, free of outside wires, pleasing in appearance and economical to manufacture.

For a further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings and to the appended claim in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a side elevational view of a combined flashlight and lens embodying one form of my invention, the lens being shown in collapsed position in dot-dash lines and parts being shown in section and broken away.

Fig. 2 is a plan view thereof, parts being shown broken away.

Fig. 3 is an enlarged horizontal sectional view taken on the plane of the line 3—3 of Fig. 1.

Fig. 4 is a side elevational view of a combined flashlight and lens embodying a modified form of the invention, the lens being shown in full lines in collapsed position and in dash lines in extended operative position.

Fig. 5 is a top plan view of the device of Fig. 4 with the lens in collapsed position.

Fig. 6 is an enlarged horizontal sectional view taken on the plane of the line 6—6 of Fig. 4.

Referring to Figs. 1 to 3, inclusive, a standard type of pocket, fountain-pen size of flashlight is illustrated having a cylindrical casing or barrel **10** housing a battery **11** and provided with a push button switch **12** at one end and an electric light bulb **13** at its other end. A conventional clip or clamp **14** is secured to the casing **10** as usual.

According to the present invention, a lens unit is operatively mounted on the casing **10** of the flashlight at the lamp end thereof. This unit includes a circular magnifying glass lens **15** having a frame **16**, made of any suitable plastic material. The frame is formed with an integral plate **17** extending from one side thereof, which plate is slightly dished and tapers towards its inner end edge. The plate is also slightly opaque to provide a shield or shade for minimizing the glare back to the user. A pair of laterally extending integral supporting or stirrup arms **18** form the sides of the plate and continue outwardly of the plate leaving a space or clearance **19** between the plate and the outer ends of the arms. A split or semi-circular sleeve member or jacket **20** formed of springy metal is slidably clamped on the casing **10** of the flashlight and carries opposed pivot pins **21** which are secured thereto in any suitable manner. The pivot pins extend through openings **22** in the outer ends of the arms **18** whereby the arms straddle the casing **10** and the lens unit is hingedly connected thereto.

It is important that the field of illumination provided by the lamp bulb **13** be substantially concentrated, or at its maximum, just beneath the lens **15** when held at reading focus above the material to be examined. A dissipation of the light over a more widely spread area than that which is under magnification, or a much greater intensity at one side, detracts to a material extent from the usefulness of a device of this character in that the material is displayed under adverse rather than improved lighting conditions. For perfection of lighting conditions a nicety of adjustment of the lens to the lamp and control of the light rays are required. The control of the direction of the beams of the lamp bulb **13** to secure the desired "spotting" on the material of the lighted area is provided by holding the flashlight casing **10** at the proper angle, by moving the lens to the proper angular position relative to the flashlight casing and by sliding the supporting sleeve **20** to proper position along the flashlight casing.

In operation, the flashlight barrel or casing **10** serves as a handle and is held at an angle of approximately 45° with the plane of the copy to be read or area to be explored. The arms **18** of the lens frame **16** are initially swung to an angle of approximately 45° relative to the longitudinal axis of the flashlight casing, with the inner edge of the shielding plate **17** impinging against the casing and serving as a stop to limit said swinging movement and to support the lens **15** in a horizontal plane. The supporting sleeve **20** is then adjusted along the casing **10** to a position in proximity of the copy to be read or area explored. When the lamp bulb is illuminated, the copy or area becomes well illuminated. The shade or shield **17** is disposed between the eyes of the user and the lamp bulb **13** so that the radiation of the light rays of the lamp bulb is confined to a downwardly and forwardly inclined direction, and the eyes are thus protected from any direct rays that may come up from

the lamp bulb or may be reflected from the subject copy due to light rays which strike same nearly perpendicularly.

The horizontal lines shown in perspective in Fig. 1 indicate the surface of some material to be examined, spaced from the lens 15 at a normal reading focus. The fainter oblique lines indicate the main direct light rays from the lamp bulb, the arrangement of the lamp bulb, lens and shielding plate being such that the projection of the beams of light are controlled and the more intense portion of the illuminated area is confined to that portion of the reading surface which is magnified by the lens 15.

When the device is not in use and it is desired to insert the same in the pocket of a vest or the like, the arms 18 of the lens unit are swung on an arc bringing the lens inwardly to a position alongside the flashlight casing 10 as shown in dot-dash lines in Fig. 1. The construction and shape of the lens 15 and its mounting are such that the lens lies flat against the flashlight casing thereby increasing the width of the flashlight casing only slightly and presenting no sharp projections so that the device readily slips into the pocket where it takes up but a minimum of space and is held therein by the clip 14. The device can just as readily be removed from the pocket. It will be understood that when the lens is collapsed the device may also very readily be inserted into a purse, bag or the like, taking up a minimum of space.

In Figs. 4 to 6, inclusive, a modified form of lens unit is shown. In this form of the invention, the lens 15' has a circular frame 16'. The frame is provided with an integral arm 23 extending laterally thereof, which arm terminates in an integral spherical member or ball 24. A split sleeve or ring 25 of springy metal is slidably mounted on the flashlight casing 10' adjacent its lamp end. The ends 26 of the sleeve extend laterally of the sleeve and terminate in a semi-circular ball seat 27, said seat being disposed on a plane offset from the plane of the body of the sleeve as seen in Fig. 4. The ball 24 fits in the seat 27 and is clamped therein by setting up on a screw 28 passing through the lateral ends of the sleeve. By reason of this universal joint between the lens and flashlight casing 10', the lens 15' is hingedly and pivotally mounted so that it may be readily swung to operative horizontal position as shown in dash lines in Fig. 4 for reading purposes, and when not in use may be rotated 90° to bring the body of the lens 15' into the plane of the body of the casing 10' of the flashlight and then may be swung inwardly toward the casing. It will be noted that the downward movement of the lens is limited by the edge of the ball seat 27. When the lens 15' is thus collapsed, the device may be readily inserted into a pocket

and just as readily removed therefrom, and because of the alignment of the casing and lens no unsightly bulge appears on the pocket.

In all other respects, the form of the invention shown in Figs. 4 to 6 is similar to the form of the invention shown in Figs. 1 to 3 and similar reference numerals are used to indicate similar parts.

It will be seen that the device is portable and is capable of being used with only one hand for a variety of purposes, such as reading fine print in telephone directories, or other works with fine print, searching for mechanical imperfections in miniaturized telephone office equipment, working on complex equipment or on watches, jewelry, engravings and typesetting, performing delicate surgical operations, for detective work of all kinds, and for numerous other purposes.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications as defined in the appended claim.

I claim:

In combination, a pocket-sized battery-operated flashlight having a cylindrical casing and a lamp bulb, a magnifying glass lens, a frame around said lens, a plate formed integrally with said frame and extending laterally thereof, spaced arms carried by said plate and extending outwardly therefrom, a slidable sleeve on said casing, opposed pivot pins carried by said sleeve and being pivotally connected to said arms, said plate being arranged over the lamp bulb and being opaque to serve as a shade for the lamp bulb, the free end edge of the plate being adapted to engage the flashlight casing upon swinging movement of the lens to operative position so as to limit said swinging movement of the lens, said plate being tapered and dished so as to lie flat against the flashlight casing when the lens is swung to collapsed condition.

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Nov. 25, 1958 G. P. STRELAKOS 2,861,501

PORTABLE LIGHT REFLECTOR WITH MAGNIFYING GLASS

Filed July 9, 1954 2 Sheets-Sheet 1

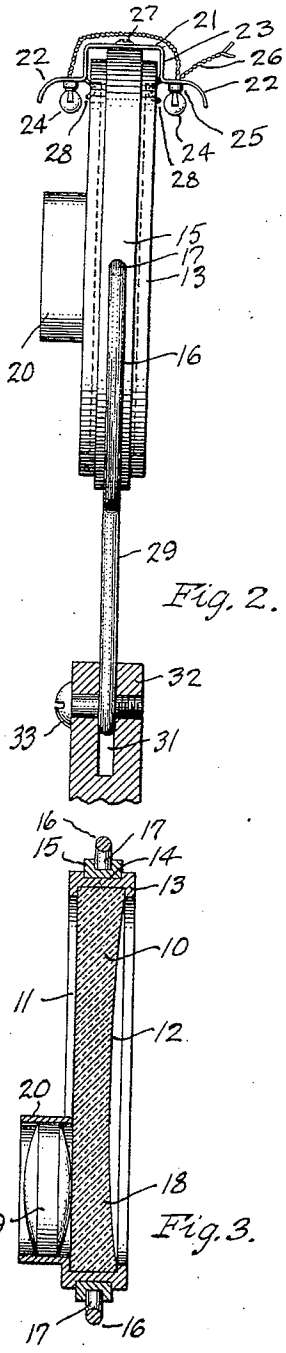

Fig. 2.

Fig. 3.

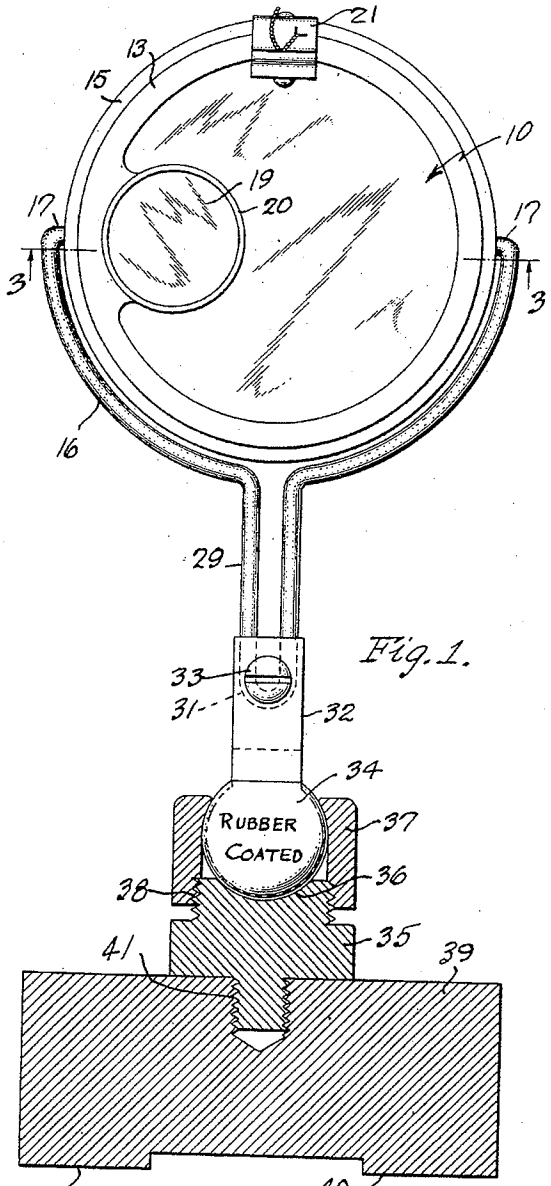

Fig. 1.

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PORTABLE LIGHT REFLECTOR WITH MAGNIFYING GLASS

Filed July 9, 1954 2 Sheets-Sheet 2

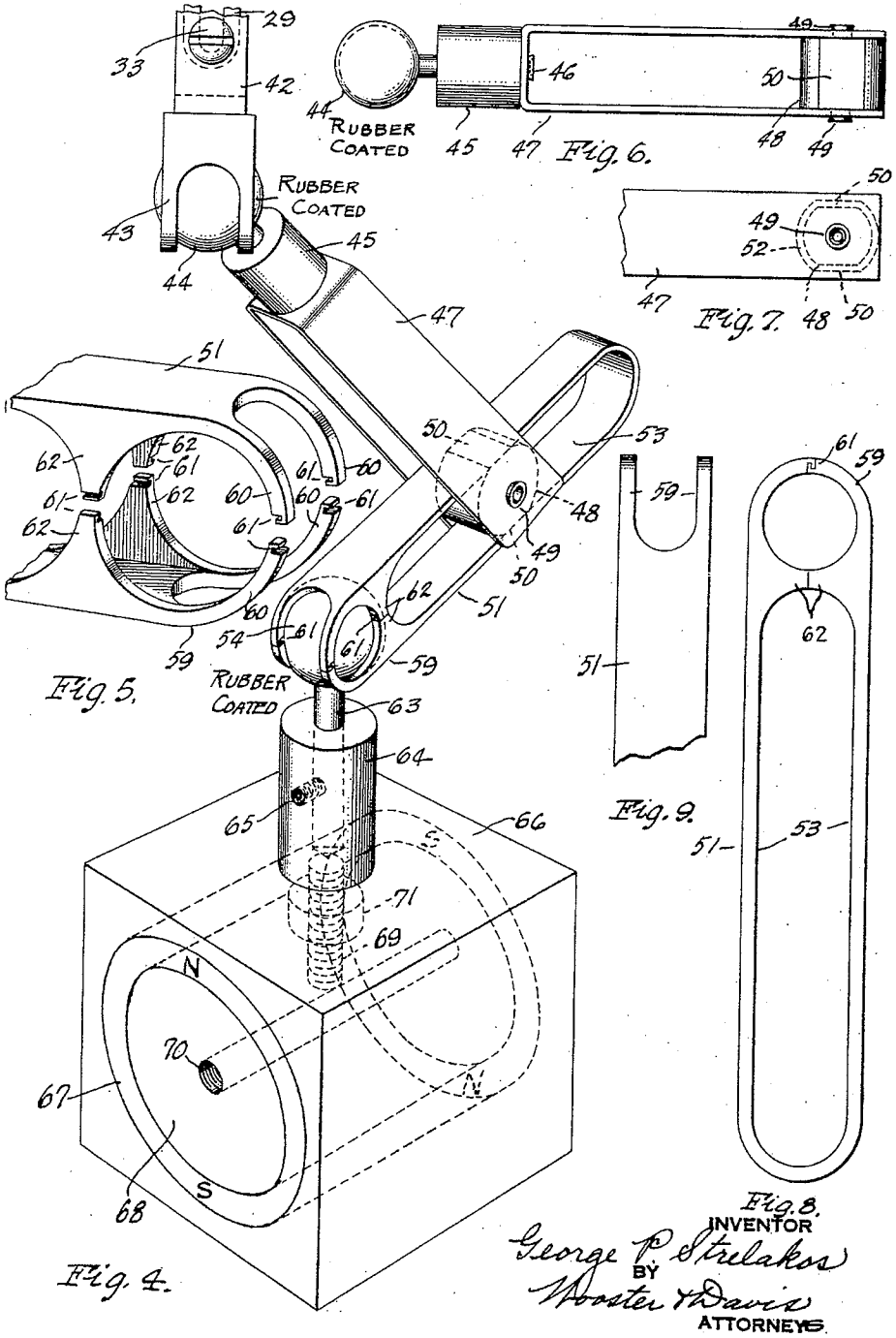

Fig. 4.

Fig. 6.

Fig. 7.

Fig. 9.

Fig. 8.

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United States Patent Office 2,861,501 Patented Nov. 25, 1958

2,861,501

PORTABLE LIGHT REFLECTOR WITH MAGNIFYING GLASS

George P. Strelakos, Stamford, Conn.

Application July 9, 1954, Serial No. 442,285

7 Claims. (Cl. 88—97)

This invention relates to a portable light and reflector for industrial use, particularly a light for use by machinists or toolmakers while working on various machine tools, such, for example, as lathes or the like, and has for an object to provide a reflector and illuminating means which may be easily and quickly located at different positions on the machine for most effectively illuminating the work on which the operator is working while he is performing the various operations.

Another object is to provide such a device which may be readily adjusted after mounting it on the machine to direct the light to any portion of the work desired and which will also have improved means for viewing the work so illuminated.

A still further object is to provide a device which will readily focus or direct a light beam in hard-to-get-at places or locations on the work, and which will eliminate the use of the usual bulky portable light and its annoying heat in close quarters, which is hung at various locations on the machine in an attempt to illuminate the work.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In this drawing:

Fig. 1 is a partial side elevation and partial section of one form of the device;

Fig. 2 is a partial edge view and partial section;

Fig. 3 is a transverse section substantially on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of a modified form of support for the light and reflector;

Fig. 5 is a perspective of a detail thereof;

Fig. 6 is a top plan view of one of the members of Fig. 4;

Fig. 7 is a side view of one end of the member of Fig. 6;

Fig. 8 is a side view of another member of Fig. 4, and

Fig. 9 is another side view of one end thereof.

The device comprises a mirror 10, preferably a double-face mirror, which has a flat reflecting surface 11 on one side and concave reflecting surface 12 on the opposite side, so that the reflected light beam may be either a more spread-out beam to illuminate a larger surface when using the flat side 11, or the curved concave side may be used to concentrate or focus the beam on a relatively small spot or area. The mirror or reflector may be made of various materials, such, for example, as glass, metal, or coated plastic. The mirror is mounted in a circular frame 13 which has a peripheral groove or channel 14 in which is seated a ring 15, the frame 13 being capable of turning movement in the ring 15 about the center of the mirror so that the mirror may be turned to different positions for a purpose presently to be described. It will be retained by friction in the adjusted

position, although clamping or other securing means could be used if desired. The ring 15 is mounted in a forked support 16 on the pivots 17 so that the mirror can also be swung to different angular positions.

Spaced laterally from its center the mirror has a clear glass or transparent portion 18 with a magnifying glass or lens 19 over this clear portion, and the reason for mounting the mirror so that it may turn about its center in the ring 15 is to locate this magnifying glass or lens at different angular positions about the center of the mirror or reflector, or that is, at different points in the frame, as for example at the left side as shown in Fig. 1, or at the top, right or bottom as desired, depending on the location of the work to be examined. The lens may be mounted by any suitable means, but in the arrangement shown the frame 13 is provided with a circular tubular section or lateral extension 20 over the clear portion 18 of the mirror or reflector, in which the lens is mounted and may be secured by any suitable means, either a suitable clamp or by cementing it in the extension 20.

This mirror or reflector may be used as a reflector for reflecting light from any suitable light source to the portion of the work to be illuminated, or if desired there may be mounted on the supporting frame for the reflector a suitable light source as an electric bulb from which the light may be reflected by the reflector onto the work. In the arrangement shown there is a small bracket or support 21, including a generally U-shaped portion with overhanging extensions 22 at the free ends of the side legs 23, within each of which is mounted an electric light bulb 24 in any suitable socket 25 connected by a light cord 26 with any of the usual plug-in devices for plugging into an electric outlet. One of these light bulbs may be mounted on each side of the double-faced mirror for use with either side. It may be secured to the mirror frame by any suitable means, such for example as a screw 27 or spring clips 28 gripping under the overhanging rim of the frame, or both, so that it may be either permanently attached to the frame or readily detachable therefrom. The light bulbs are located so that the light therefrom may be reflected by the mirror surfaces onto the work.

Two different forms of adjustable supports are shown for the mirror and light. In the form shown in Figs. 1 to 3, the forked support 16 includes an intermediate extension 29 comprising parallel side members forming a connecting loop 30 which is seated in a recess or notch 31 in the end of a support 32, and held therein by any suitable means, such as a screw 33, which will form a clamping pivotal connection which will permit the support 29 to be swung to different angles, but may be tightened to clamp it in different angular positions. The support 32 includes a ball 34 mounted in a suitable socket support 35 having a spherical seat 36, and in which the ball may be seated and held and clamped by a retaining sleeve 37 having screw thread connection 38 to the member 35. This could be a rubber coated ball to increase the grip. This provides a universal connection whereby the support 32 and the mirror and other parts carried thereby may be shifted in all directions, and then held in the adjusted position either by tightening up the sleeve 37 to clamp it in this position, or this sleeve may be adjusted to frictionally hold the mirror support in different angular positions, so that it may be shifted to these positions by merely applying lateral pressure to the support.

A suitable supporting base is provided for mounting and securing the mirror on any part of the machine with which it is being used. The preferred supporting base includes a permanent magnet. That shown at 39 is provided with exposed areas 40 of opposite polarity whereby it may be

supported at any position on the machine by merely bringing it into contact with any part of the machine and it will firmly support itself in any position on the machine, together with the mirror or reflector and other parts associated therewith. The socket member 35 is connected to this base by any suitable means, such as the screw thread connection 41. Other types of supporting bases for securing the device to the machine may be used, such, for example, as clamps or suction cups, but a magnetic means is preferred as it is more reliable and no manipulation is required in attaching it to the machine. All that is necessary is to bring it into engagement with any part of the machine to which it is desired to attach the mirror or reflector and the associated parts.

In the form of Figs. 5 to 9 a somewhat more complicated form of support for the mirror and lens is provided whereby greater adjustment and universal movement is possible, particularly where light is desired at highly inaccessible locations or locations difficult to get at. In this form the mirror and its support 16 are the same as in Figs. 1, 2 and 3, and it is mounted on the support 42 by a screw 33. This support 42 corresponds to the support 32 of the first form, and has a forked end 43 tightly gripping a ball 44 for universal movement, which ball is preferably rubber covered or coated to give a better frictional grip. This fork 43 may be of the same construction as that shown at 59 on member 51. This ball 44 is mounted on a supporting member 45 which is riveted as indicated at 46 to the U-shaped support or link 47. This link 47 carries between its side arms at their free ends a transverse pin 48 pivoted at its opposite ends by reduced studs 49 riveted over in the side arms of the member 47, and this pin has flats 50 on its opposite sides slidable in the link 51, the pin being preferably rubber covered or coated as shown at 52, for a better frictional grip in the guideway 53 in the link and to hold the device in different adjusted positions. The half rivets 49 also form a tight, close pivot connection between the member 47 and the member 48 which will permit turning movements of the member 47 to different angular positions about the member 48 and to different angular positions on the link 51, but the pivots 49 being tight enough to retain the member 47 in these different angular positions. The free end of 51 can go through member 47 and therefore 47 can be swung to either side of member 51. One end of the link 51 is mounted for universal movement on the ball 54 which is also preferably rubber covered or coated for a better frictional grip with the end 59 of the member 51. This end is preferably forked as shown, the two side fingers 60 of the fork being substantially circular to grip the ball 54 and it is divided on a horizontal line, the opposite sides of this division being locked together by the interlocking hook members 61, there being also preferably provided similar fingers 62 on the opposite side of the ball and interlocked at their free ends by similar hooks 61 in the same manner. The same locking connection may be used for the fork 43 of the member 42.

The ball 54 is mounted on a pin 63 in a stud or member 64 in which the member 63 may be turned to different angular positions and secured by any suitable means, such as a socket set screw 65. The member 64 is mounted on a base block 66 which is preferably of rubber or other suitable nonmagnetic plastic molded in one piece about a tubular permanent magnet 67, and the center space or passage in this magnet may be also filled with this plastic, as shown at 68. The opposite ends of the tubular magnet are preferably exposed at the opposite side surfaces or ends of the block 66, and it is magnetized to have opposite poles at both of its ends, and each end has both north and south poles. Thus, for example, as shown, the left hand end shown in solid lines is preferably located with one pole, such, for example, as a north pole at the top, and an opposite or south pole at the bottom. The same arrangement would be used at the opposite end, except that the poles would be reversed with the south pole at the top and the north pole at the bottom, and this also provides opposite poles at the opposite ends at both the top and bottom of the magnet and the block 66. The block is tapped from the top wall to receive the threaded stud 69 of the support in member 64, and the plastic member 68, and also with tapped openings 70 from its opposite ends to receive the same stud 69 so that the member 64 may be mounted either on the side or the opposite ends of the block 66 as preferred, and also for use of the magnet either with its exposed ends in direct contact with the metal support of the machine on which it is used when supported on the opposite ends of the block 66, or spaced a slight distance from the metal support when the block 66 is supported on the side or bottom surface, as indicated in the drawing. A metal insert 71 may be used in the tapped opening, either in the top or in the end openings 70 if desired, to increase the strength of the threads in the plastic material for holding the stud 69.

All the joints of this support are friction joints requiring pressure to shift the elements connected together by this joint with respect to each other, and it will be seen that with the construction shown a relatively large amount of movement and adjustment may be given to the mirror 10 and the lens 19 as well as universal movement to practically any angle desired, and the mirror will be automatically retained in this position with respect to the supporting block 66 and thus in any position desired with respect to the work to be examined. The block 66 with the magnet 67 can be secured in any desired position on any metal part of the machine which includes iron or steel. Thus no clamps are required to secure the device in any desired position on the machine, it being merely necessary to place the block in any position desired, and it will be automatically retained there by the magnet. The members 42, 44, 57 and 64 could be of metal, or could be of suitable plastics if desired for lighter weight.

This device can be easily and quickly placed on any part of the machine tool with which the machinist or toolmaker is working, and it will be held effectively by the magnet without any clamping operation, and then the mirror or reflector can be adjusted to illuminate the work or any part or surface on it, even the inside of an opening or bore difficult to illuminate with ordinary means, and if desired, the magnifying glass or lens 19 may be shifted to give a magnified view of the portion illuminated. It will be apparent this will greatly facilitate the work of the machinist, toolmaker or other operator and make it much easier for him to do accurate work, and the device will, while effecting this improved illumination and permitting better examination of the work, do so while leaving both hands of the operator free for carrying out his operations. It is especially adapted for use by toolmakers, machinists, inspectors, precision mechanics and others who wish to effectively illuminate and examine any particular article or surface thereon.

Having thus set forth the nature of my invention, I claim:

1. An industrial portable light reflector comprising a mirror having exposed opposite sides each operable as a light reflector to direct a beam of light to work being processed in a machine, said mirror including a clear portion offset laterally from the center of the mirror, a magnifying lens over the clear portion in position to observe the area on which the light beam is directed, means mounting the mirror for turning movements about a center axis at right angles to the plane of the mirror to position the lens at different angular positions about the center of the mirror, a permanent magnetic means having exposed surface areas of opposite polarity whereby it may be supported on the machine, and a supporting means mounting the mirror and lens on the magnetic means for adjustment to different positions relative thereto including connected members one of which has a rubber covered ball with the rubber fixed to the ball and the other has a forked end gripping this ball.

2. An industrial portable light reflector comprising a mirror operable as a light reflector to direct a beam of light to work being processed in a machine, said mirror including a clear portion offset laterally from the center of the mirror, a magnifying lens over said clear portion in position to observe the area on which the light beam is directed, a permanent magnetic means having exposed surface areas of opposite polarity whereby it may be supported on the machine, a supporting means for the mirror including means whereby it may be turned in the plane of the mirror about its center axis at right angles to this plane to locate the lens at different angular positions about this center and spaced therefrom, and means mounting said mirror supporting means on the magnetic means for adjustment to different positions relative thereto.

3. An industrial portable light reflector comprising a mirror operable as a light reflector to direct a beam of light to work being processed in a machine, said mirror including a clear portion offset laterally from the center of the mirror, a magnifying lens over said clear portion in position to observe the area on which the light beam is directed, means mounting the mirror for turning movements about its center axis at right angles to the plane of the mirror to locate the lens at different angular positions about this center, a supporting base including means whereby it may be secured to the machine, and a supporting means mounting the mirror and lens on said base including means whereby the mirror and lens may be adjusted to different positions relative to said base.

4. An industrial portable light reflector comprising a mirror operable as a light reflector to direct a beam of light to work being processed in a machine, a magnifying lens mounted on the mirror offset laterally from the center of the mirror in position to observe the area on which the light beam is directed, a ring in which the mirror and lens is mounted, a second ring, cooperating guide means on the rings mounting the mirror for turning movements about the center of the mirror in the plane of the mirror to locate the lens in different angular positions about said center and spaced therefrom, a support in which the mirror is pivotally mounted for lateral swinging movements, a supporting base including means whereby it may be secured to the machine, and means mounting said support on the base for universal adjustment of the mirror relative to said base.

5. An industrial portable light reflector comprising a mirror operable as a light reflector to direct a beam of light to work being processed in a machine, a magnifying lens mounted on the mirror offset laterally from the center of the mirror in position to observe the area on which the light beam is directed, a ring in which the mirror and lens is mounted for turning movements about the center of the mirror on an axis at right angles to the plane of the mirror to locate the lens in different angular positions about said center and spaced therefrom, a support in which the mirror is pivotally mounted for lateral swinging movements, a permanently magnetic means having exposed surface areas of opposite polarity whereby it may be supported on a machine, and supporting means

mounting said support on the magnetic means including a universal connection comprising connected members one of which has a ball with a fixed rubber coating on its surface and the other has a forked end gripping this ball permitting universal adjustment of the mirror and lens relative to said magnetic means.

6. An industrial portable light reflector to direct a beam of light to work being processed in a machine comprising a mirror, a supporting means for said mirror including a permanent magnet, a supporting member connected with the magnet including a rubber coated ball, a link member having a forked end frictionally gripping the ball and including a body portion provided with a longitudinal guide slot, a second link including a forked body, a rubber coated pin having flattened sides frictionally slidable in said guide slot, a pivot means connecting the second link to said pin having sufficient friction to retain the link in different angular positions about said pin, and adjustable means mounting the mirror on said second link.

7. An industrial portable light reflector to direct a beam of light to the work being processed in a machine comprising a mirror, a supporting means for said mirror comprising a base member including means whereby it may be secured to the machine, a first link comprising an elongated body having a longitudinal guide slot and a forked end, a member secured to said base provided with a rubber coated ball frictionally gripped by said forked end, a second link including an elongated forked body, a rubber coated pin between the sides of said forked body and having flattened sides frictionally slidable in said guide slot, means pivotally securing the second link to said pin having sufficient friction to hold said link in different angular positions with respect to the first link, a rubber coated ball mounted on the second link, and a mounting means for the mirror including a member having means frictionally gripping said latter ball for substantially universal angular adjustment thereon.

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